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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,339	08/01/2003	Thomas Richards	08935-294001 / M-5029	4181
26161	7590	04/05/2007		
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER ECHELMEYER, ALIX ELIZABETH	
			ART UNIT 1745	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/633,339	<b>Applicant(s)</b> RICHARDS ET AL.	
	<b>Examiner</b> Alix Elizabeth Echelmeyer	<b>Art Unit</b> 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 51-55 and 59-89 is/are pending in the application.
- 4a) Of the above claim(s) 14, 71-82, 86 and 88 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 51-55, 59-70, 83-85, 87, 89 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to the amendment filed January 5, 2007. Claims 1, 9, 11, 15, 51, 59 and 83 have been amended. Claims 1-13, 15, 51-55, 59-70, 83-85, 87 and 89 are pending and are rejected finally for the reasons given below.

### ***Claim Objections***

2. The objections to claims 15 and 85 are withdrawn in light of the amendments.

### ***Claim Rejections - 35 USC § 112***

3. The rejection of claim 83 under 35 U.S.C. 112, second paragraph is withdrawn in light of the amendment.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-13, 15, 51-55, 59-70, 83-85, 87 and 89 are rejected under 35 U.S.C. 103(a) as being obvious over Johnson (US Patent 6,955,187) in view of Brotz (US Patent 5,588,295).

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Regarding claims 1-3, 51-53 and 59-61, Johnson teaches a battery having a control valve for controlling airflow into the battery. The control portion is made of two cylindrical sleeves, or members, having holes, that can be moved into or out of registration depending on whether air is required for the cell. The movement is controlled by actuators that are attached to the cylinders (abstract; Figure 1; column 3 lines 9-11). Further, Johnson teaches that the current required to induce a shape change in the actuators is generated by electricity from the electrochemical cell (column 4 lines 15-17).

As for claims 4, 15 and 62, as seen in Figure 1, the multiple holes are arranged in columns along the cylinders.

Regarding claims 5 and 63, it can be seen in Figures 5 and 6 that the second member is coupled to the mechanism and that the second member moves in relation to the first.

As for claims 83, 85 and 87, the "first member" of the instant application is considered the inner member of Johnson and the "second member" the outer member. Thus, Johnson also teaches these limitations as discussed above.

As for claims 6, 9, 55, 64, 67, Johnson teaches that the actuators are made of wire shape memory alloys (column 3 lines 55-59).

Regarding claims 7, 65 and 89, Johnson further teaches that the shape memory alloy is preferably TiNi.

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As for claim 54, in Johnson, the current required to induce a shape change in the actuators is generated by electricity from the electrochemical cell (column 4 lines 15-17).

Regarding claims 10, 12 and 68, it can be seen in Figures 5 and 6 of Johnson that a member is coupled between the actuator and the upper end portion of the second member.

Regarding claims 8, 66 and 84, Johnson teaches that when the valve is in the fully off position, no current flows from the cell to the wire actuator (column 5 lines 22-27).

As for claims 11, 13, 69 and 70, Johnson discloses the claimed invention except for the shape memory alloy actuator being in the shape of a ribbon instead of a wire. It would have been an obvious matter of design choice to use a ribbon or a wire, since such a modification would have involved a mere change in the shape of the component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B)

Johnson fails to teach a the mechanism of the instantly claimed invention, specifically, a member made of a shape memory alloy responsive to current which changes from concave to convex, which in turn moves the members in relation to one another.

In Figures 5 and 6 of Johnson, it is seen that two components go into a mechanism that moves the two members in relation to one another. The first, an

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actuator mechanism (29), contains a shape memory alloy (column 3 lines 55-67). The second is a latch mechanism (94) that changes from concave to convex in shape, depending on how the members are situated relative to one another.

Brotz teaches a memory metal actuator that may be concave or convex in shape depending on the current applied to it (abstract, Figures 3 and 4).

It would be desirable to replace the latch and actuator mechanism of Johnson with the actuator of Brotz since the actuator of Brotz would solve the same problem of Johnson, to open or close the members in relation to each other, since it would eliminate the need for both the latch and the actuator mechanism of Johnson, making production of the cell simpler since fewer parts would be needed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the latch and actuator mechanism of Johnson with the actuator of Brotz, making production of the cell simpler since fewer parts would be needed.

### ***Response to Arguments***

6. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

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SUSYTSANG-FOSTER  
PRIMARY EXAMINER